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"SALOME"
By Franz von Stuck

EXHIBIT CONTEMPORARY GERMAN PAINTING
COURTESY ACADEMY NOTES

The Modern Artistic Pianoforte

A Scientific Study of Its Construction

By HENRY LOWELL MASON

CHAPTER I

IF I were determined to become an expert yachtsman, I would certainly study the tides, the charts, and the winds; I would closely observe divers manifestations in the air and on the water's surface indicative of the approach of squalls or storms, also varied appearances of the water denoting shoals, rocks, and sandbars. All these I should no doubt wish to know, but I think I should also wish to know, and, indeed, could not expect to be a dexterous sailor unless I did know, somewhat of the boat itself—its general construction, the names of its various sheets, sails, masts, and so on; the form of its hull, its water draught, its necessary and adequate amount of ballast, and many other details.

In like manner it seems to me that to one who is studying or has studied pianoforte playing, a knowledge of the instrument itself, its construction, the mechanism and workings of the various and principal factors in its make-up must be of advantage; and, in fact, without such knowledge—for instance, the mechanism of the pedals, the dampers, etc.—the best results cannot be obtained by a player. The modern pianoforte (and we speak of the artistic instrument) is an exceedingly delicate and sensitive mechanism, and, to a certain extent, all artistic pianofortes, like men, differ one from another. True, there is a plan of construction which in general is the same for all pianofortes, just as all men are alike in outline, speaking broadly; but, as in the case of twins, which in outward appearance are alike but differ one from another in temperament, feeling and character, so with pianofortes; and, although two instruments may be made by the same hands, they will not be absolutely similar in all respects. For this there are simple yet valid reasons. It is unnecessary in a paper of this kind to point them out or to draw too fine a line, and it is the general scheme of construction upon which pianofortes are built, with certain modifications and differences, which interests us; and while it is also true that in different classes or grades of pianofortes this general scheme varies in detail, still there is one fundamental basic plan upon which all artistic pianofortes are built.

It has been said that "Art includes not only the formative arts, such as painting, sculpture, and architecture, but also all forms of music and poetry, down to the very novel—in fact all man's work so far as it is directly

meant to produce æsthetic pleasure."—Charles Waldstein on John Ruskin. A work, therefore, which has as its basis, or which is the outcome of, scientific research, provided it produces æsthetic pleasure, may be termed an Art Product, and there can be no doubt but that the best pianofortes of the present day fall in this category.

The artistic pianoforte is an evolution—an outcome of years of scientific investigation and labor, supplemented by touches of that rare and abiding attribute, genius; and the differences between the cheap and the artistic piano are just as distinct and real as those between a Stradivarius violin and a forty-dollar fiddle; the one is an art product, the other an imitation—alike in form, but in form only—the divine spark is in one, but not in the other. How few of the Rembrandt, the Franz Hals, or the Holbein subjects would vitally interest us to-day if we had only ordinary photographs of the persons in place of their portraits by these great men; the photographs would probably seem to us in no way distinguished or more worthy of serious attention and study than a hundred or a thousand others; but because these faces—albeit commonplace enough in themselves—have come to us from master brushes; because in every fibre they are imbued with that which stands for far more than mere likenesses of persons; because they have in them, to a rare degree, the human quality; for these and other reasons they thrill us and impress us as being the very essence of freshness, brightness, vigor, pathos, dignity, grace, or what not—in a word, because they are the result of genius they are ultimate and real, and for this reason are they superior to and different from an ordinary painting.

It is the same with pianos; the tones of one instrument go to the foundation of our natures, arousing or soothing our deepest and best emotions, touching our hearts and stirring our very souls; while another instrument, in which the hand of the artist has had no part, merely tickles the ear, if indeed it does so much as that.

But *revenons à nos moutons!*

In a word, the general construction of the modern artistic grand pianoforte is as follows:

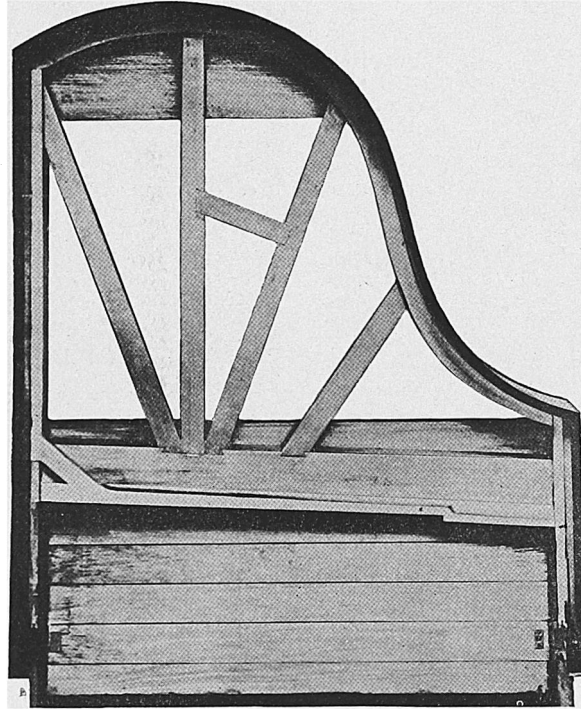
First, the Case, consisting of its sides and ends; and within the sides, supporting and holding them in place, posts or braces of heavy

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timber, forming the body or frame of the instrument. To this frame, at its front end, it attached the wrest-plank or pin-block into which the tuning-pins are driven; while over the frame is laid, first, the sounding board, which is made fast to the sides of the case, and then the iron plate, the purpose of the latter being to hold the strings drawn at great tension across it from end to end. The action is then adjusted in such manner that a hammer on being brought into play by the depression of its key, strikes a string, or unison, thus

grow into larger and larger circles, expanding until they are stopped only by the surrounding shores. And so the extent to which the sound-waves or vibrations penetrate throughout the instrument depends much upon the thoroughness with which the different parts are constructed, and the perfection with which they are put together. In the artistic pianoforte this is an important point; in the inartistic piano it is ignored.

With this outline in brief of the general construction of the instrument, let us proceed



Cut showing the Rim or Casing, which is not continuous, but which is glued together at the points a and b.

producing a tone. Now, the strings, in being drawn from the front to the farther end of the plate, rest upon a bridge which bears directly upon the sounding-board, being glued to it. As the strings are set vibrating or pulsating by the hammer blows, the vibrations are communicated through the bridge to the sounding-board, causing it in turn to vibrate, thus reinforcing and amplifying the tone from the strings—in fact, upon the capacity of the sounding-board for vibration depends largely the quality or character of the tone. The vibrations traversing the board are conducted by it to the case of the instrument, and, in truth, throughout the entire structure.

This traveling of the vibrations over the sounding-board may be likened to the effect caused by dropping a pebble into a lake; at first ripples or waves start in small circles, their center being the point at which the pebble strikes the surface of the water; they then

to consider in detail the four principal parts, namely, the Case, the Iron Plate, the Sounding-board, and the Action.

THE CASE.

The case consists of the sides and end and the posts or beans, which form the body or frame of the structure. The sides in ordinary pianos comprise separate pieces of wood, while in the artistic instrument the entire rim is continuous from end to end without a break. Some instruments are made with the curved sides bent by steam in the solid wood, afterwards being veneered; but the better way is to build the cases of layers of continuous maple of practically veneer thickness and glued together, the whole being bent into the required form by powerful presses. The continuous strips are, for the ordinary small or so-called baby grand, about sixteen feet in length. Several important advantages are gained by this

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glued-up method; first, a general solidity; second, freedom from shrinking or swelling; third, a reinforcement of the sound-vibrations as they come in contact with the rim or casing from the sounding-board.

In the ordinary piano these sound-vibrations are retarded and broken in crossing from one distinct part of the rim to another.

The continuous rim is itself composed of two sections, an inner and an outer, and the inner rim is not so high as the outer rim, the reason being that a shelf may be formed on the inner rim upon which to rest the sounding-board and the iron frame. The continuous rim, considered as a whole, is then covered with a veneer, inside and outside, and it is the outside veneer which receives the polish.

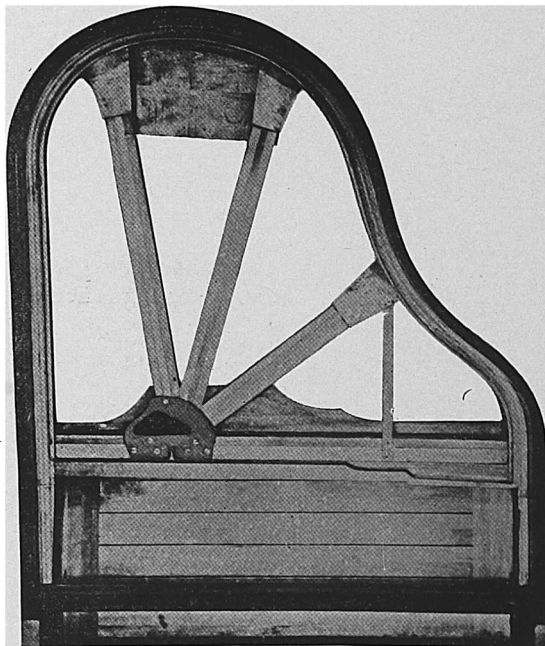
The posts or beams above referred to help to maintain the downward tension of the sounding-board caused by the pressure of the strings on the bridge glued to the sounding-board; and they also serve to solidify the whole instrument; and yet, at the same time, they do not cause a rigidity, for the whole instrument must, in order to obtain best tonal results, be flexible enough to permit an inter-vibration of wood and metal. The case forms a complement, so to speak, of the sounding-board and other parts, and *vice versa*, the two together making the perfect whole.

It may be interesting to note that prior to the year 1820, spinets, harpsichords, and clavichords, the forerunners of the pianoforte, were wooden structures entirely, the iron plate being inaugurated at a later date, when, owing to the development of these instruments and their culmination in the pianoforte, a greater string tension became necessary. The pianoforte of the concert hall is to-day a far more powerful instrument than it was forty years ago, one reason for this being that modern music, with its complicated and heavy orchestration, has compelled a greater volume of tone in the pianoforte in order that the desired result may be obtained. In the days of our great-grandfathers such works as the Tchaikowsky *Pianoforte Concerto* in B-flat minor with its orchestral accompaniment could have found no adequate expression in the spinet, harpsichord or clavichord.

Cross Section of Bent-up Rims.

The pin-block or wrest-plank, which is virtually a part of the case, is, as its name implies, the block into which the pins are set which hold the strings, and it is attached to the front end of the frame; and its construction is of great importance, for upon its perfection depends, in a large measure, the capacity of a pianoforte to remain in tune.

Without question, the most perfect manner of making the pin-block is to employ separate thicknesses of hardwood, usually rock maple, glued one upon another in such fashion that the grain of each layer (and there are usually six altogether) crosses the grain of the layer directly above or below it, at right angles. Owing to this arrangement it becomes well-nigh impossible for the pin-block to swell or shrink as a whole, and the pins are firmly and



Cut showing the Continuous Rim bent into its proper shape for Grand Pianoforte, and the Posts or Beams.

rigidly held—much more so than if they were merely driven into solid wood.

We have stated above that it is the veneer, which covers the casing or frame, which receives the polish. The process of polishing is an essential one, for there are climatic and atmospheric influences which affect the outer appearance of a pianoforte deleteriously unless the polishing is done in a most careful manner. Without going too deeply into details, it may be said that the polishing of the case is no such easy matter as it might seem to be from a superficial consideration. As a matter of fact, the process requires at least three months' time that it may be adequately done. There are a number of separate coats of shellac and varnish given, rubbings with rottenstone and with pumice. One of the details is of particular interest. After a number of distinct operations, there is left but one thing to be done, and that is to get the final gloss; and for this there is nothing so efficacious as the human skin. The varnished case is rubbed thoroughly with great care by the soft part of the inside of the hand. This arouses a friction, and the heat generated so acts on the varnish as to create the gloss. The men who do this rubbing must see to it that the epidermis of their hands is kept soft and pliable, and, while they must of necessity exercise a tremendous force in their work, they must perform no labor which will incapacitate their hands for their unique part.

(Continued in June number.)